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Jan 9, 1997

DERWENT-ACC-NO: 1997-087472

DERWENT-WEEK: 199941

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TITLE: Electronic delay detonator for controlled blasting operations - uses shock tube to initiate heat generation and activate thermoelectric battery that charges capacitor which discharges through timing circuit and detonates explosive

INVENTOR: FALQUETE, M A; PELLIN, R J

PATENT-ASSIGNEE:

ASSIGNEE

IBQ IND QUIMICAS LTDA

CODE

IBQIN

PRIORITY-DATA: 1995BR-0002995 (June 23, 1995)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<input type="checkbox"/> WO 9701076 A1	January 9, 1997	E	010	F42D001/045
<input type="checkbox"/> US 5942718 A	August 24, 1999		000	F42C011/00
<input type="checkbox"/> AU 9661835 A	January 22, 1997		000	F42D001/045
<input type="checkbox"/> BR 9502995 A	September 23, 1997		000	F42D003/00
<input type="checkbox"/> GB 2319075 A	May 13, 1998		001	F42D001/045
<input type="checkbox"/> GB 2319075 B	May 12, 1999		000	F42D001/045
<input type="checkbox"/> AU 706146 B	June 10, 1999		000	F42D001/045

DESIGNATED-STATES: AM AT AU BB BG BY CA CH CN CZ DE DK EE ES FI GB GE HU JP KE KG KP KR KZ LK LR LT LU LV MD MG MN MW MX NO NZ PL PT RO RU SD SE SI SK TJ TT UA US UZ VN

CITED-DOCUMENTS:2.Jnl.Ref; GB 1319857 ; GB 2257776 ; JP 6252451 ; JP 63110680 ; US 3388879 ; US 3570404 ; US 4095998 ; US 4178415 ; US 5206456 ; WO 9200498

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
WO 9701076A1	June 20, 1996	1996WO-BR00026	
US 5942718A	June 20, 1996	1996WO-BR00026	
US 5942718A	May 14, 1998	1998US-0981393	

US 5942718A		WO 9701076	Based on
AU 9661835A	June 20, 1996	1996AU-0061835	
AU 9661835A		WO 9701076	Based on
BR 9502995A	June 23, 1995	1995BR-0002995	
GB 2319075A	June 20, 1996	1996WO-BR00026	
GB 2319075A	December 18, 1997	1997GB-0026800	
GB 2319075A		WO 9701076	Based on
GB 2319075B	June 20, 1996	1996WO-BR00026	
GB 2319075B	December 18, 1997	1997GB-0026800	
GB 2319075B		WO 9701076	Based on
AU 706146B	June 20, 1996	1996AU-0061835	
AU 706146B		AU 9661835	Previous Publ.
AU 706146B		WO 9701076	Based on

INT-CL (IPC): F23 Q 7/02; F42 B 3/10; F42 B 3/16; F42 B 3/18; F42 C 11/00; F42 D 1/045; F42 D 3/00

ABSTRACTED-PUB-NO: US 5942718A

EQUIVALENT-ABSTRACTS: The electronic delay detonator is used to initiate explosive charges after a predetermined delay time, and transforms thermal energy generated by a heat source (2) into electrical energy through a miniature thermoelectric battery (3) inside the detonator shell. The heat source (2) is placed over the heating face (3A) of the battery (3) which has its opposing face (3B) unheated. A nonelectric initiation signal, such as a shock tube (1), is transmitted and provokes the heat source (2) to produce heat and causes the battery to generate electrical energy that charges a capacitor (4). The energy is then discharged through a timing circuit and then detonates the primary explosive (7) which detonates the secondary explosive charge. ADVANTAGE - Combines safety of nonelectric initiation with precision of electronic delay circuit WO 9701076A The electronic delay detonator is used to initiate explosive charges after a predetermined delay time, and transforms thermal energy generated by a heat source (2) into electrical energy through a miniature thermoelectric battery (3) inside the detonator shell. The heat source (2) is placed over the heating face (3A) of the battery (3) which has its opposing face (3B) unheated. A nonelectric initiation signal, such as a shock tube (1), is transmitted and provokes the heat source (2) to produce heat and causes the battery to generate electrical energy that charges a capacitor (4). The energy is then discharged through a timing circuit and then detonates the primary explosive (7) which detonates the secondary explosive charge. ADVANTAGE - Combines safety of nonelectric initiation with precision of electronic delay circuit

CHOSEN-DRAWING: Dwg.1/5

TITLE-TERMS: ELECTRONIC DELAY DETONATE CONTROL BLAST OPERATE SHOCK TUBE INITIATE HEAT GENERATE ACTIVATE THERMOELECTRIC BATTERY CHARGE CAPACITOR DISCHARGE THROUGH TIME CIRCUIT DETONATE EXPLOSIVE

DERWENT-CLASS: Q73 Q79 X25

EPI-CODES: X25-D;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1997-071963